

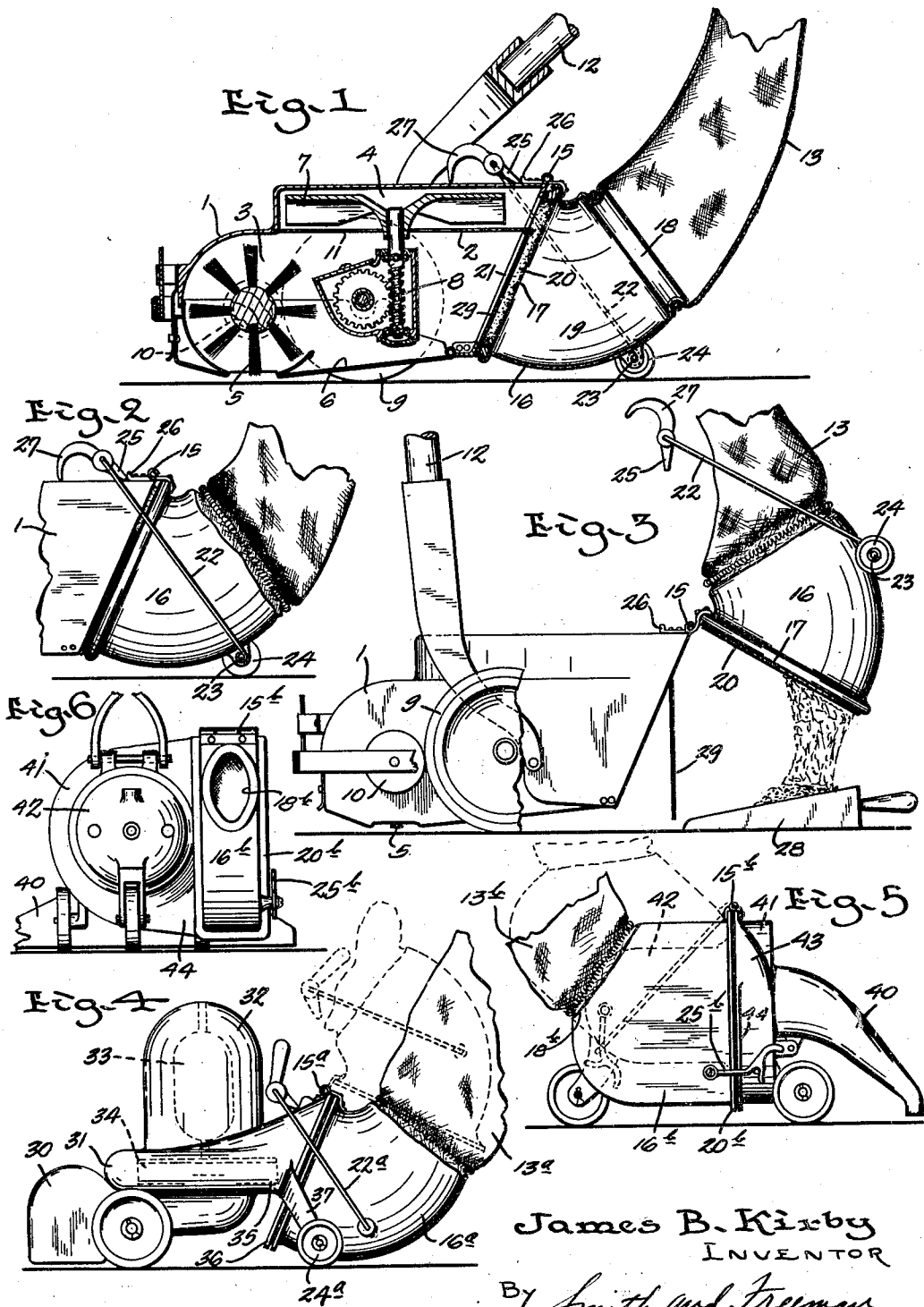
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1,949,052

SUCTION CLEANING APPARATUS

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UNITED STATES PATENT OFFICE

1,949,052

SUCTION CLEANING APPARATUS

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This invention relates to suction cleaning apparatus and has for its object the provision of a new and improved litter receptacle which can be more easily emptied than previous devices of this nature. Most suction cleaners are provided with porous dust-bags of cloth or other filtering material as shown for example in my Patent No. 1,184,458, to separate the litter from the airstream by which it is carried; and despite the employment of various expedients to facilitate the opening and closing of the bag, as shown for example in my Patent No. 1,214,796, the removal of the dust and litter from such a bag has always been a messy and unpleasant operation which the user has always deferred as long as possible, with the result that the cleaning ability of the machine is often times considerably impaired. The main objects of the present invention are the provision of a litter-receptacle of such form, nature, material, and location that it can be evacuated more easily than the usual dust-bag and even preferably without the necessity of removing it from the cleaner, yet without impeding the operation and manipulation of the cleaner; the provision of a litter box so secured to the cleaner-casing as to enable it to be emptied without soiling the hands or clothing; the provision of a litter-box, hinged or otherwise movably secured to the cleaner; while further objects and advantages of the invention will appear as the description proceeds.

In the drawing accompanying and forming a part of this application I have shown my improvements as applied to a traction-type cleaner, to a vertical type electric cleaner, and to a horizontal type electric cleaner, so that those skilled in the art may understand the nature of my invention and that it is applicable to diverse kinds of cleaners and may assume numerous and diverse specific forms. Figure 1 is a longitudinal sectional view of a traction-type suction cleaner having one of my improved dust-boxes attached thereto, the box being in closed or receiving position; Figure 2 is a partial side elevation of the parts shown in Figure 1; Figure 3 is a side elevation of the cleaner shown in Figure 1, showing the dust-box in open or discharging position; Figure 4 is a side elevation of a vertical-type electric cleaner having my improved dust-box connected thereto; Figure 5 is a side elevation of a horizontal type electric cleaner having my improved dust-box connected thereto; and Figure 6 is a rear elevation of the device shown in Figure 5.

The cleaner shown in Figure 1 is that of my

application Serial Numbers 382,665 and 469,140 filed Augst 1, 1929, and July 19, 1930, respectively. It comprises a hollow casing 1, separated by a partition 2 into a brush-chamber 3 and a fan-chamber 4, the former containing a brush 5 cooperating with the bottom 6 of the casing which constitutes a dust pan, and the latter containing a fan 7 driven by gearing 8 from the floor wheels 9 which also operate the brush through the end portions 10 thereof. The partition 2 is formed with an inlet opening 11 establishing communication between the two chambers, and the fan-chamber opens freely through the rear of the casing. The cleaner is moved over the floor by means of a handle 12 from which is suspended the upper end (not shown) of the porous dust-bag 13.

Hinged horizontally at 15 to the rear of the casing 1 is a hollow receptacle 16 made of some rigid, impervious substance such as metal, fiber, synthetic resin, papier-mâché, or the like, having an open mouth 17 pitted to the rear end of the casing 1 and a second mouth 18 having the bag 13 secured thereover, and having between said mouths a cavity 19 for the reception of litter. The mouth 17 conforms in shape and size to the open rear end of the casing 1 and is preferably provided with a soft packing 20 adapted to seat against a flange 21 formed on the casing and to make a tight joint therewith; I have shown the receptacle as embraced by a resilient wire bail 22 having its ends pivoted to a transverse rod 23 (which here also carries wheels 24) and having its bight traversing the top of the casing 1. Pivoted to this bail is a clip having a projection adapted to be wedged behind a suitable abutment 26 in the casing and a finger piece 27 by which the clip can be manipulated.

The bag 13 communicates freely with the interior of the receptacle; the mouth 18 preferably being slanted so as to face obliquely upwardly and the rear of the casing is preferably undercut so that the mouth 17 also faces obliquely upwardly. Upon detaching the clip the receptacle can be displaced as shown in Figure 3 so as to discharge its contents into a dust pan 28 without detaching or even touching the dust bag.

In this particular type of cleaner a hinged flap 29 is employed to close the rear of the brush chamber and prevent the air discharged by the fan from returning to the inlet opening 11. This flap may well be located so as to become pinched between the packing 20 and casing-end when the receptacle is closed.

The cleaner shown in Figure 4 comprises a

casing having a collecting nozzle 30, fan casing 31, and motor housing 32; said housing containing an electric motor having its armature 33 vertical and direct-connected to a fan 34. Extending rearwardly from the periphery of the fan casing is an outlet neck 35, terminating in an enlarged flange 36, preferably undercut so as to face obliquely downwardly, and pivoted to this flange on a horizontal axis at 15^a is a receptacle 16^a which may be substantially similar to that heretofore described and attached to a similar dust bag 13^a and secured in place and manipulated by a similar bail 22^a and clip. In this embodiment of my invention I have shown the rear wheels 24^a of the cleaner carried by a bracket 37 formed on a part of the casing and projecting past the receptacle.

The cleaner shown in Figures 5 and 6 comprises a casing having a collecting nozzle 40, fan casing 41, and motor housing 42 connected together in the order named from front to rear, the motor having its shaft substantially horizontal, and the fan casing having at one side of said housing a tangential outlet neck 43 terminating in a mouth surrounded by a rearwardly facing flange 44. Pivoted on a horizontal transverse axis 15^b at the top of this flange is a hollow receptacle 16^b which is located at one side of the motor housing, having an open front surrounded by a seat 20^b which is normally secured by a suitable clip 25^b tightly against the flange 44 which depends from the outlet neck 43 to constitute a closure for the open face of the receptacle. The rearward upper part of the receptacle 16^b is formed with a mouth 18^b over which the dust bag 13^b is secured. When the clip 25^b is released the receptacle can be moved to the position shown in dotted lines in Figure 5, its entire forward face being then open for the free discharge of the litter therein.

It is desirable to form these receptacles with a storage cavity depending below the air stream issuing from the cleaner so that litter may fall therein and remain undisturbed until discharged. It is also desirable that the opening between the receptacle and bag be unobstructed so that any dust collecting inside the bag may fall or be shaken down into the receptacle and readily evacuated. Many changes in shape, size, position and appearance may be made in connection with my improved dust box and I do not limit myself in any wise except as specifically recited in my several claims which I desire may be construed broadly each independently of limitations contained in other claims.

Having thus described my invention what I claim is:

1. In a suction cleaner, a dust bag, a litter receptacle hinged to the cleaner in communication with the discharge outlet thereof and connected to said bag and having a collecting cavity at a lower level than the cleaner discharge outlet, said receptacle having rigid walls and also having next to said cleaner an opening which is closed and opened by the movement of said receptacle about its hinge toward and away from the cleaner.

2. In combination with a suction cleaner, a dust-bag, a box hinged to said cleaner and having two openings, one of said openings communicating with said dust-bag and the other opening communicating directly with the discharge outlet of said cleaner in receiving relation when said box occupies one position relative to its hinge, and being displaced therefrom and presented downwardly in litter-discharging

position when said box occupies a second position relative to its hinge.

3. For use on a vacuum cleaner, a dust receptacle comprising a box of rigid material having means for attachment to the discharge outlet of the cleaner and means for the attachment of a dust bag, said first means including provision for adjustably securing said box with one face presented to the discharge outlet of the cleaner, that face of said box having an opening therein to receive litter from said cleaner when said box is adjusted to one position or to discharge the box contents when said box is adjusted to a second position while attached to the cleaner casing.

4. As an article of manufacture, a dust-receptacle for suction cleaners comprising a box of rigid material having openings in two opposed walls, means for attaching a dust-bag to one opening, and means for hinging said box to a cleaner casing with its other opening alternately communicating with the outlet of the cleaner-pump or swung away to discharge accumulated litter.

5. In a suction cleaner, a dust receptacle of rigid, impervious material separate from the body of the cleaner and having two openings therein, a dust bag attached to one of said openings, and means including a horizontal hinge for attaching said receptacle to the discharge outlet of the cleaner, the hinge axis being located above the discharge outlet to enable said box to be swung away from said cleaner for discharging its contents.

6. In a suction cleaner, a flange surrounding the discharge outlet of the cleaner, a propelling handle secured to said cleaner, a dust box having rigid, impervious walls and two openings, a porous dust bag suspended from said handle and having its lower part connected to said box about one of said openings and having its interior communicating freely with the interior of said box so as to discharge dust and dirt therein, and means for detachably securing the other opening of said box in communicating relation with the cleaner discharge outlet and having its margin pressed against said flange whereby the dust box may be emptied without disconnecting it from the dust bag or disconnecting the dust bag from the cleaner handle.

7. In a suction cleaner of the portable type, a porous dust-bag, and a receptacle hinged to the discharge outlet of said cleaner and fastened to said dust-bag for receiving and storing dust deposits.

8. In a suction cleaner of the portable type, an attaching member rigidly secured to the cleaner adjacent the discharge opening thereof, a dust box displaceably secured to said attaching member and having an opening in one face adapted to communicate with said discharge opening, the opening in said box being larger than the cleaner discharge opening, said dust box also having a second opening therein, a dust collecting porous bag fastened over said second opening so as to discharge dust therein, and means operative when the first opening of said box registers with the cleaner discharge opening for sealing off a part of the stated box opening, the full area of such opening being available for the purpose of discharging the accumulated litter in said box when it is displaced with respect to said cleaner.

9. A suction cleaner of the portable type, a propelling handle for said cleaner, a dust bag

carried by said handle and communicating with the discharge outlet of said cleaner, and a concave coupling member connecting said bag to said cleaner and having an internal cavity constituting a litter receptacle, said coupling being hinged to said cleaner so as to enable evacuation of its contents.

10. In a suction cleaner, a flange depending below the cleaner outlet, a dust box hinged to the top of the cleaner over said outlet and having its walls of impervious rigid material, said dust-box having an open side normally pressed against said flange and surrounding said outlet and it-

self having a second opening spaced therefrom, and a dust-bag connected to said second opening.

11. The combination with a vacuum cleaner having a casing and a bag, of a dust-trap of rigid material separate both from said casing and from said bag and interposed between said casing and bag and pivotally secured to said casing, said dust-trap having a storage cavity located below the path of the air from said casing to said bag, the litter accumulated in said trap being discharged therefrom when said trap is displaced from said casing.

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15	90
20	95
25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150